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EXAMINER

CHEN, TIANJIE

ART UNIT PAPER NUMBER

2627

DATE MAILED: 07/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/693,466

Applicant(s)

JANG ET AL.

Examiner

Tianjie Chen

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-6 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Non-Final Rejection (RCE)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Katsumata (US 6,826,016).

Claim 1, Katsumata shows a flex interconnection circuit in Figs. 3-8 on a substrate, including: a connector bonding site 53; an electronic component collection bonding site 52 (Figs. 7 and 8), at least one MR read-write head bonding site (the site near 26 in Fig. 3), the connector bonding site coupled to the electronic component collection bonding site; and the electronic component collection bonding site coupled to at least one MR read-write head bonding site; wherein the electronic component collection inherits at least one preamplifier (Column 1, lines 51-55).

Claim 2, Katsumata shows an interconnection circuit in Fig. 14, wherein capacitors 96 is mounted on the trace (Column 10, lines 51-53), which can smoothen the power source (Column 1, lines 60-63).

Claim 3, the above constructed device includes a flex interconnection circuit including: a connector 64 bonded to the connector bonding site 53 (Figs. 3 and 4; column 7, line 45 to column 8, line 3); the electronics component collection 50

Art Unit: 2627

bonded to the electronics component collection bonding site including at least the preamplifier bonded to the electronic component bonding site; and at least one MR read-write head bonded to said MR read-write head bonding site; wherein the flex interconnection circuit couples the connector and the preamplifier; wherein the flex interconnection circuit couples the preamplifier the MR read-write head.

Claim 4, the above constructed device includes a second MR read-write head bonded to the MR read-write head bonding site; wherein the flex interconnection circuit couples preamplifier and second MR read-write head.

Claim 5, the above constructed device includes an actuator (Fig. 1) including: a head slider 25 (Fig. 3) affixed with the MR read-write head of the flex interconnection circuit described above, the flex interconnection circuit anchored about the preamplifier to said actuator; and at least one binding of the flex interconnection circuit between said preamplifier and the read-write head.

Claim 6, in above constructed device, the actuator is inherently coupled by the connector to a disk drive controller printed circuit board.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al (US 5,859,746) in view of Rancour et al (US 7,002,780) and Takasugi (US 6,351,351).

Claim 1, Ishida et al shows a flex interconnection circuit in Figs. 6 and 7 on a substrate Fb (Column 5, lines 48-49), including: a connector bonding site (above connector 32 in Fig. 7; column 7, line 12); an electronic component collection bonding site at marks 18a, 18b, and 18c (Column 7, line 19), at least one MR read-write head connecting site 16 (Column 6, line 43), the connector bonding site coupled to an electronic component collection bonding site through P13 (column 6, lines 44-46); and the electronic component collection bonding site coupled to at least one MR read-write head connecting site through P11 (Column 6, lines 42-43).

Ishida et al does not show the detail of connecting the MR read-write head to the site 16.

Rancour et al shows a flex connection, wherein the MR read-write head on 12 is bonded to the flex at the bonding site 90 (Fig. 7). Rancour further teaches that his configuration increases conductivity, improves static attitude control, and is more efficient for manufacturing (Column 2, lines 8-10). One of ordinary skill in the art would have been motivated to use the head connecting site in Ishida et al's device as bonding site for bonding the MR read-write head thus increasing conductivity, improving static attitude control, and is more efficient for manufacturing.

Ishida et al does not specify IC as preamplifier.

Takasugi shows an interconnection circuit, wherein IC is a preamplifier (Column 7, line 9). It is also well known in the art that preamplifier is commonly used in interconnection circuit on the suspension, which is also always an IC. One of ordinary skill in the art would have been reasonably expecting the IC in Ishida et al's device includes a preamplifier.

Claim 3, the above constructed device includes a flex interconnection circuit including: a flex interconnection circuit substrate Fb, a connector 32 (Ishida et al's Fig. 7) bonded to the connector bonding site; the electronics component collection 18a, 18b, and 18c bonded to the electronics component collection bonding site including at least the preamplifier bonded to the electronic component bonding site; and at least one MR read-write head bonded to said MR read-write head bonding site; wherein the flex interconnection circuit couples the connector and the preamplifier; wherein the flex interconnection circuit couples the preamplifier the MR read-write head.

Claim 4, the above constructed device includes a second MR read-write head bonded to the MR read-write head bonding site (Column 2, lines 30-35); wherein the flex interconnection circuit couples preamplifier and second MR read-write head.

Claim 5, the above constructed device includes an actuator 5 (Fig. 1; column 5, line 40) including: a head slider 9 (Fig. 1) affixed with the MR read-write head of the flex interconnection circuit described above, the flex interconnection circuit anchored about the preamplifier to said actuator; and at least one binding of the flex interconnection circuit between said preamplifier and the read-write head.

Claim 6, in above constructed device, the actuator is inherently coupled by the connector to a disk drive controller printed circuit board.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al in view of Rancour et al and Takasugi as applied to claim 1 above, and further in view of Katsumata (US 6,826,016).

Art Unit: 2627

Claim 2, Katsumata shows an interconnection circuit in Fig. 14, wherein capacitors 96 is mounted on the trace (Column 10, lines 51-53), which can smoothen the power source (Column 1, lines 60-63).

Ishida et al show power line P3 (Column 6, line 51-52) in Fig. 7. One of ordinary skill in the art would have been motivated to add the capacitors taught by Katsumata onto the power line in Ishida et al's device in order to smoothen the power source.

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted Prior art (AAPA) in view of Katsumata (US 6,826,016).

AAPA shows an interconnection circuit having all features recited in this Application except that in AAPA the MR read-write head is connected to the electronic components collection through a connector rather than directly connection. Katsumata shows an interconnection circuit, wherein the MR read-write heads are directly connected to the electronic component collection without a connector in between. Katsumata teaches that this configuration the length of each wiring pattern from the magnetic head to the head IC can be shortened so that the inductance and capacitance of the wiring pattern can be reduced (Column 1, lines 55-58). One of ordinary skill in the art would have been motivated to apply Katsumata's design to AAPA to reduce the inductance and capacitance.

Response to Arguments

5. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoax Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TIANJIE CHEN
PRIMARY EXAMINER